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Meso- and Submesoscale-Scale circulations of Atlantic Water in the Ionian Sea

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We present an analysis of the glider data collected in the Ionian Sea in the framework of the project Mediterranean Forecasting System Toward Environment Predictions (MFSTEP). We investigate the circulation of the upper water masses (0-200m) mainly based on repeated sections of temperature, salinity, and oxygen, carried out between Italy and Lybia from September 2004 to February 2005. The glider has revealed a long-lived mesoscale structure centered around 37°N 17°W related to the so-called mid-Ionian Jet. It is anticyclonic and characterized by a core of fresh waters from Atlantic origin. It has an horizontal scale of 50km and a vertical scale of 150m. This structure remained at aproximately the same location for the whole experiment. The glider gave also evidence to submesoscale circulations at the edge of this structure presenting a very high aspect ratio (˜1 km along the horizontal direction and ˜50m along the vertical one). These secondary circulations would participate actively to vertical transfers between the surface and the deep sea.